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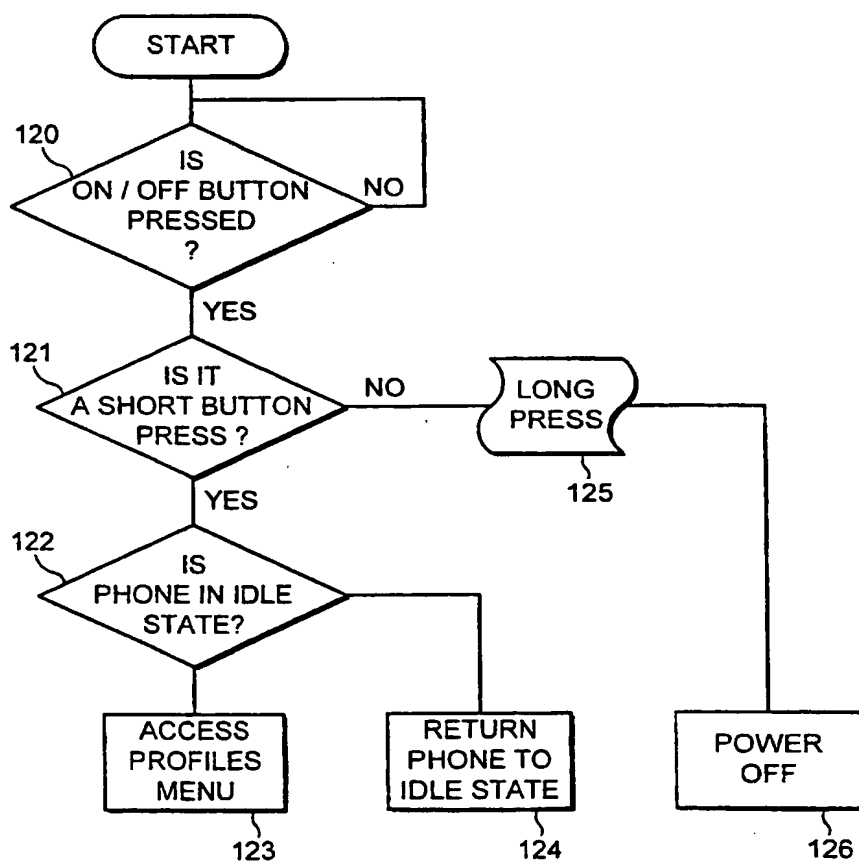
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(54) Title: A PORTABLE DEVICE



(57) Abstract: A portable device is described which comprises a user input and a processor. The user input has a key with a plurality of functions. It has a first function when the device is in a first state and a second function when the device is not in the first state. The processor is arranged to determine the state of the device (Step 122) and to perform the first or second function (Steps 123, 124) depending upon the state of the device. When it performs the second function (Step 124), the processor returns the device to the first state.

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A PORTABLE DEVICE

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The present invention relates to a portable device. In particular, it relates to the user interface of a portable device, such as a radio communications device.

- 10 There is currently a trend to strive towards the miniaturisation and wearability of portable devices. Particularly where phones are concerned, this results in a trade off against the ergonomics and ease of use of a conventional handset. One option is to compromise on the functionality of the device. However, another is to develop a new user interface that still supports typical features,
- 15 such as phone calls, messaging and paging in an easily accessible way.

According to the present invention, there is provided a portable device comprising: a user input comprising a key having a first function when the device is in a first state and a second function when the device is not in the

20 first state, a processor arranged to determine the state of the device and to perform the appropriate function in response to a first mode of operation of the key; wherein the second function is the change of state of the device to the first state.

- 25 Since the key has more than one function associated with it, the number of keys required is reduced. Moreover, it enables the user to readily switch the device to a particular function, such as a commonly used function or menu. This is particularly useful if the user is in a low level of the menu structure and wishes to get to the top level, for example, without navigating through the
- 30 levels in between.

In a preferred embodiment, the first state is an idle state. That is one, for example, in which the device is waiting for user actuation or, if the device is a phone, one in which it is waiting for a phone call. The device is, for example,

in the idle state when it is at the top level of the menu structure. A device which is mid menu, on the other hand, can be considered to be in a non-idle state.

- 5 The first function may, for example, be a shortcut to a predetermined menu.

The predetermined menu comprises a list of first level menu items, such as profiles, call register, messages, infrared, calendar, calculator, games, call divert, settings.

10

Alternatively, the predetermined menu may comprise a second level menu. One such menu might be the profiles menu of the Nokia 6110 which has the options general mode, silent mode, meeting mode, outdoor mode, and pager mode.

15

In a preferred embodiment of the present invention, one or more further functions are accessible by the user operating the key in an alternative manner or manners to that used to access the first and second functions. For example, the first and second functions may be accessed upon a relatively short depression of a key, whereas a further function may be accessed upon a longer depression of the key. The further function may be dependent or independent of the state of the device. Yet another further function or functions may equally be accessed using one or more further manners. One such manner may be multiple depressions of the key within a given period.

25

Accordingly, the device may have a key that has a third function and, in this case, the processor is arranged to perform the third function in response to a second mode of operation of the key.

30 The third function may be associated with a second state of the device and the key may have a fourth function associated with a third state of the device. In this case, the processor is arranged to perform the appropriate third or fourth function in response to the second mode of operation of the key, depending upon the state of the device.

The processor determines the mode of operation of the key by the duration of operation, for example, by comparing the duration against a predetermined threshold.

5

The key may be a button, but this is not essential. Alternatively, it may be a particular position of a multipositional device, such as a rocker, roller or joystick.

- 10 Preferably, the key is the on/off key of the device. Clearly, in this case, one of the functions (e.g. the third function) of the key is to turn the device off.

As mentioned above, the device may be a communication device such as a radiotelephone

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For a better understanding of the present invention and to understand how the same may be brought into effect reference will now be made by way of example to the enclosed drawings in which:

- 20 Figure 1a is a front perspective view of a phone in a closed configuration;
Figure 1b is a side perspective view of the phone in a closed configuration;
Figure 2a is a front perspective view of the phone in an open configuration;
Figure 2b is a side perspective view of the phone in an open configuration;
Figure 3 is a schematic illustration of the phone;
- 25 Figure 4 is an illustration of the joystick of the phone;
Figure 5 illustrates the Menu structure in the phone;
Figure 6 illustrates a first method of data entry in accordance with the invention;
Figure 7 illustrates a second method of data entry in accordance with the
30 invention;
Figure 8 is a front perspective view of the phone in an open configuration;
Figure 9 illustrates a third method of data entry in accordance with the invention;

Figure 10 illustrates a fourth method of data entry in accordance with the invention;

Figure 11 illustrates a method of variable scrolling speed in accordance with the invention;

5 Figure 12 is a flow chart illustrating the multiple functionality of an on/off switch of the phone;

Figure 13 illustrates various idle screens;

Figures 14 and 15 illustrate the functionality of an easy access button; and

Figure 16 illustrates various message screens.

10 Figure 17a illustrates how message functions can be accessed through the Menu 50;

Figure 17b illustrates various formats that a displayed message or displayed caller details may take;

15 Figure 18a illustrates how a message may be read when received with the cover open;

Figure 18b illustrates how a message may be read when received with the cover closed using the easy access key and then optionally opening the cover;

20 Figure 18c illustrates how a message may be read when received with the cover closed without using the easy access button but by opening the cover.

Figures 1 and 2 illustrate a phone 2. The phone has a body portion 4 and a cover portion 6 connected by a hinge 5. The cover is movable between a closed position as illustrated in Figures 1a (front perspective) and 1b (side perspective) and an open position as illustrated in Figures 2a (front perspective) and 2b (side perspective).

30 The body portion 4 includes a back face 7 which forms the back of the phone, lateral side faces 8a and 8b which form the sides of the phone, an upper side face 10 which forms the top side of the phone, a lower side face 12 which forms the bottom side of the phone, and a front face 14 which is exposed when the cover is in the open position and concealed when the cover is in the closed position. The body has: an antenna 16 on its upper side face 10; a microphone 18 on its lower side face 12; an open-cover button 20, a voice dial

button 22, and an on/off button 24 on its side faces 8; and has a display 26 and a user input device 28 which is preferably a joystick on its front face 14. The buttons are user actuatable. The body also has a hinge switch 30 (not shown) which detects the position of the cover, being actuated when the
5 cover opens and closes.

The cover portion 6 has an exterior surface 32 which is accessible when the cover is in the closed position and an interior surface 34 which is inaccessible when the cover is in the closed position but is exposed when the cover is in
10 the open position. The cover portion has on its exterior surface 32 an easily accessible button 36 and a speaker 38. The cover portion has on its interior surface 34 a speaker 40. The cover also has an aperture 42 extending all the way through the cover. The aperture is positioned and sized so that when the cover is in the closed position only a first portion 26a of the display 26 is
15 visible through the aperture 42 to the user. The aperture may be covered with a transparent material to allow the user to see the first portion of the display 26a.

When the cover is in the closed position the interior surface 34 of the cover
20 abuts with the front face 14 of the body 4. The cover is arranged and sized to enclose the input device 28 and display 26 to prevent access by the user. A portion 26a of the display 26 may, however, be viewed by a user through the aperture 36.

25 When the cover is in the open position the front face 14 of the body and the interior surface 34 of the cover 6 form an oblique angle of between 135 and 175 degrees. In this configuration the whole of the display 26 is exposed, the user input device 28 is exposed and the microphone 18 on the lower side face 12 of the body 4 and the speaker 40 on the interior surface 34 of the cover 6
30 are at their maximal separation.

The dimensions of the phone in this example are : length 60mm, width 40mm, depth 20mm approx. The display is 2.1 x 1.4 cm (84x48 pixels).

Figure 3 is a schematic illustration of the phone 2. The phone 2 has the previously described antenna 16, voice dial button 22, on/off button 24, input device (joystick) 28, hinge switch 30, easily accessible button 36, microphone 18, display 26, speakers 40 and 38. In addition the phone has a processor 44,
5 a transceiver 46 and a memory 48. The antenna 16 is connected to the transceiver 46. The transceiver has reception circuitry for receiving radio frequency signals encoded with data. It processes the received signals as is known in the art to provide the data in digital form to the processor 50. This
10 data may be a voice message or part of a phone conversation in which case the processor controls the speaker 40 to provide an audible output to the user. Alternatively the data may be part of an alphanumeric message in which case the processor 44 is operable to provide the message on the display. The transceiver has transmission circuitry which is provided with digital data from
15 the processor 44 which may have been input via the microphone 18 or via the input device 28 as alphanumeric characters. The transmission circuitry produces radio frequency signals encoded with that data. The processor is connected to memory 48 to which it can write and from which it can read. The memory 48 typically stores software which controls the functioning of the
20 processor and the phone. In particular the software controls how the processor responds to inputs and what outputs it provides.

The processor is connected to the display 26 and to the speakers 40 and 38. It controls the output provided by these devices.

25

The processor is arranged to receive an input from the microphone 18, the input device (joystick) 28, the hinge switch 30, the on/off button 24, the voice dial button 22 and the easily accessible button 36.

30 The open cover button 20 is not illustrated in Figure 3 as it opens the cover by mechanical as opposed to electrical action. The natural or low energy configuration for the phone is when the cover is open. The cover is biased to be in the open position. When a user closes the cover they rotate the cover on its hinge against that bias and bring the cover and body into contact. The

cover is latched in this closed position. Activating the open cover button releases the latch and the cover springs open.

5 The antenna 16, transceiver 46, processor 44, memory 48, display 26, speaker and microphone 18 are standard features of a phone. Previously such features have operated in combination with a keypad to provide the standard functions of a phone including making a call either via a phone book or by direct character entry, receiving a call, creating and sending a message, reading a received message and maintaining a phonebook. However, in the
10 phone 2, the features operate in combination with the joystick 28 to provide these standard functions.

Previously in the NOKIA 6110 telephone the keypad had 12 alphanumeric keys, two soft keys whose function changes and a scroll key. The functions
15 of that phone are accessed through a Menu which is navigated using the soft keys and the scroll key. In the phone 2, the functions of the phone are accessed through a Menu which is navigated using the joystick 28.

Figure 4 illustrates the joystick 28 which can be moved with a user's thumb.
20 The joystick can be pushed forward (towards the display) while simultaneously pushed to the left or right, pushed to the left or right while simultaneously pushed up or pulled back (towards the microphone), and pulled back while simultaneously being pulled left or right. In addition to each of the above movements the joystick may be simultaneously pushed inwards
25 towards the face 14. The joystick 28 has a resting position and it is resiliently biased so that it returns to its resting position when the user has moved it or depressed it and then released it.

The joystick operates in two different modes. The joystick operates by default
30 in "navigation" mode except when it is in "text editing" mode. In navigation mode there are five independent mutually exclusive activation states for the joystick.

When the joystick is pushed up, the processor performs an upward scrolling function within the current level of the Menu and updates the display accordingly. When the joystick is pulled back, the processor performs a downward scrolling function within the current level of the Menu and updates the display accordingly. These scrolling functions are the same as those scrolling functions in the NOKIA 6110. When the joystick is pushed to the left, the processor exits to the previous higher level in the Menu. When the joystick is pushed to the right, the processor presents on the display the options available to the user but in the Idle Mode it brings up the Menu. When the joystick is pushed inwards the processor enters the next level of the Menu or if there are no further levels it will display the options available to the user.

Figure 5 illustrates the layout of a Menu 50. When the phone is first switched on it enters the Idle state 54 in which it waits to receive a call or for user actuation. The joystick is in navigation mode. Pushing the joystick to the right enters the Menu 50. The Menu has on its first level 52 seven selectable items. These items are: Number Dial 521 which allows the user to input a number or select a number from memory for dialling; Call Divert 522 which includes options for diverting an incoming call to another number; Settings 523 which includes settings related to calls, phone and security; Profiles 524 which includes options for a user to customise the modes of phone use; Names 525 which is an editable phonebook from which calls can be made; Call Register 526 which includes a record of phone calls made; and Messages 528 which includes options for reading and composing text messages. The user can move from one item to an adjacent item by pushing the joystick up or down. The user can select an item and enter the second level 53 of the menu by pushing the joystick in. The user can return to the idle state from the first level 54 by pushing the joystick to the left.

The Menu items are the same as those in the NOKIA 6110 except that the joystick is used to navigate the Menu 100 and that due to the absence of an alphanumeric key keypad a new Number Dial item 521 is provided and new alphanumeric character entry methods are provided within each of the items where necessary.

In Idle mode the joystick has several pre-defined modes of operation. Pulling the joystick back causes the Names menu 525 to be displayed. Pressing the joystick inwards results in a shortcut to redial the last number dialled.

5 Pressing the joystick inwards when an alphanumeric message is received causes the phone to display the Message "In Box" to read the message. Pressing the joystick inwards when an incoming call is received causes the incoming call to be answered.

10 The "text editing" mode of the joystick is active when alphanumeric character entry is required. In this mode the joystick operates in the same manner as an integrated cursor control device in the keyboard of a portable computer in that it controls the position of a cursor or similar selector on the display 26. The joystick can additionally be pressed to accept the selected character(s).

15

In "text editing" mode, a short press of the joystick to the left results in the deletion of the previous character. A long press to the left (1-2 seconds) causes the deletion of all the text entered so far. In this case the phone subsequently reverts to Idle mode.

20

A call may be made using the phone via the Names item 525, via Number Dial item 521 or via voice dial.

25 An incoming call may be answered, when the phone is in the closed configuration, by opening the cover. An incoming call may be answered when the phone is in the open configuration by pressing the joystick inwards. Closing the cover or by pressing the joystick inwards ends the call. When the cover is open, pushing the joy stick to the left rejects the call. The content of the display is the same when an incoming call is received irrespective of
30 whether the cover is open or closed.

Turning now to the menu structure as shown in Figure 5, further details of the menu structure will be described with reference to Figure 6.

A mixed menu of characters and operands for functions of the phone, (e.g. to make a call) is used. In this case, the joystick is used to navigate to the Number Dial menu which is then selected by pushing the joystick inwards. A menu is displayed on the display and a user selects the numerical characters by pushing forward and pulling back the joystick as appropriate. Once the number input is complete, the user selects the Call operand item from the menu and the call is established.

Figure 6 shows the display 26 displaying the "Number Dial" menu item 521. In figure 6 a left arrow indicates that the joystick is pushed to the left, a right arrow indicates that the joystick is pushed to the right, an up arrow indicates that the joystick is pushed forward, a down arrow indicates that the joystick is pulled back and the symbol • indicates that the joystick is pushed inwards. A user selects the Number Dial option by pushing the joystick inwards (602) as described previously.

The display then changes to a text input mode with a menu 60 on the right-hand side of the display. The items of the menu 60 comprise both alphanumeric characters and operands, e.g. Call, OK, Name, Add etc. These operands can be represented textually or graphically as shown in Figure 6. The icon 66 of a phone indicates the call operand. Thus a user can access the required functionality of the phone without having to move to a separate menu to carry out an action.

To select from the menu 60, a user scrolls through the menu (604) by pushing the joystick forward (if movement up the menu is required) or pulling the joystick back (if movement down the menu is required). Each item in the menu 60 is highlighted at the bottom right-hand corner of the display as the menu is scrolled. When the required alphanumeric character is highlighted, the user selects the character (606) by pushing the joystick inwards. The selected character 62 is then displayed on the left-hand side of the display 26,

adjacent the menu 60. This action is repeated (608) until the text input is completed.

When the user has finished inputting the number, the user selects the phone icon 66 from the menu 60 by pushing the joystick inwards (610). The display 26 then changes (612) to indicate that this operand is being performed and the device proceeds to try to establish the call.

As described previously, pushing the joystick to the right at any time (614) causes the display of options available to the user at that time and pushing the joystick to the left at any time (616) causes the current menu to be exited.

Figure 7 shows the menus available when the Name menu 525 is selected. The user is presented with the "Add Name" option 72 and inputs a name using the alphanumeric characters in the menu 70. Again the items of the menu 70 comprise both alphanumeric characters and operands, e.g. OK, Caps (for capital letters), Insert, Exit etc. Once the name has been input, the user then selects from the menu 70 the required operand e.g. OK. When this operand is selected (702) the user is presented with the "Add Number" option 74 and a menu 76 of operands and numeric characters. Once the number to be associated with the name has been entered, the user selects the required operand from the menu 76 e.g. OK and the name and number are stored (704) in the memory 48 of the phone as a phone book entry. Suitable operands are OK, Insert and Cancel.

25

Alternatively the menus 60, 70, 76 may be provided at the bottom of the display in a horizontal manner. The menu items may be displayed a line at a time with an up/down movement of the joystick resulting in the display of successive lines of menu items and a left/right movement of the joystick resulting in the highlighting of successive items in the line of the menu 60.

30

The joystick may also be used to input data directly, without the requirement for a menu of options to be displayed on the screen. For instance, the input device 28 may be used to input numeric characters. Figure 8 shows an

example of such a joystick. In Figure 8, feedback to the user about the characters available is provided around the joystick, on the front face 14 of the body 4. Alternatively this feedback may be provided on the display 26.

5 In this mode, a user is prompted to use the joystick to input numbers, for instance by an image 90 on the display 26 (see Figure 9). If the user pushes the joystick forward the numbers 1, 2 or 3 may be selected; if the user pushes the joystick to the right the numbers 4, 5 or 6 may be selected; if the user pulls the joystick back the numbers 7, 8 or 9 may be selected; if the user pushes
10 the joystick to the left the number 0 and the characters * and # may be selected. Pushing the joystick repeatedly in one direction causes the characters available to be scrolled through; a character may be selected either if a pre-determined time has elapsed without any further input from a user or by the user pushing the joystick inwards (902) for a short time.

15

Once the user has input the number by successively pushing/pulling the joystick and then pushing the joystick inwards (904-908), the user pushes the joystick inwards for a relatively long time (e.g. 1-2 seconds) (910). This causes a menu 94 to be displayed. The user selects the appropriate action by
20 pushing the joystick inwards (912) and the device carries out the action.

In a similar manner, the joystick may be used to input alpha characters. In this mode, a user is prompted to use the joystick to input alpha characters, for instance by an image on the display 26. If the user pushes the joystick
25 forward the characters a, b, c, d, e, f, g may be selected; if the user pushes the joystick to the right the characters h, i, j, k, l, m may be selected; if the user pulls the joystick back the characters n, o, p, q, r, s, t may be selected; if the user pushes the joystick to the left the characters u, v, w, x, y, z and "space" be selected. Pushing the joystick repeatedly in one direction causes
30 the characters available to be scrolled through; a character may be selected either if a pre-determined time has elapsed without any further input from a user or by the user pushing the joystick inwards for a short time.

The device may be arranged to default to the mode of data input. Alternatively it may be a mode that is activated by the user selecting the option in the device's Profiles 524.

5 A further method of data input will now be described with reference to Figure 10. A user scrolls through a list of characters 100 in blocks of three 102 by pushing the joystick forward or pulling the joystick back. The user selects a character by then pushing the joystick to the right (104) until the required character is highlighted and then pushing the joystick inwards (105) for a short
10 time. When the user has inputted the entire item, the user pushes the joystick inwards (106) for a relatively long time. A menu 108 of actions is then displayed and the user selects the appropriate one by pushing the joystick inwards.

15 According to a further aspect of the invention, the speed of scrolling is determined by the position of the joystick as illustrated in Figure 11. A selectable item is highlighted as the items in a menu are scrolled though. A single movement of the joystick up or down (110) causes a display (menu or text) to be scrolled through by one line at a time. Thus in Figure 11 the
20 highlighted item will change from Bruce to Carl. Pushing the joystick inwards (111) selects this item.

Moving the joystick up or down and holding it in this position (112) causes the item to be scrolled through continuously e.g the names Bruce, Carl, Diana,
25 Fiona, ... Graham, Guy will be scrolled though in a continuous manner until the joystick is released. Pushing the joystick inwards (111) selects the highlighted item.

Moving the joystick up or down and holding it in this position whilst also
30 pressing in on the joystick (113) results in a higher speed of continuous scrolling. Thus the display changes from Graham, Guy, Helen to further down the menu (e.g. Susa, Tom, Trevor) faster than previously. Thus a user can quickly scroll through a long list until the general region of the required item is located and then release the inward pressure on the joystick to cause the

speed of scrolling to reduce. The joystick can then be held in the up (or down) position until the required item is located. The joystick is released and pushing the joystick inwards (111) then selects the highlighted item.

- 5 The hinge switch 30 is activated when the cover 6 is opened and is activated when the cover is closed. The switch detects when the interior surface 34 of the cover 6 makes a specific acute angle (for example 5 degrees) with the front face 14 of the body 4. The processor maintains a register which changes state when the hinge switch is activated. The processor is therefore aware of
10 whether the cover is in the open or closed position. The processor also detects via the hinge switch 30 when the cover is opened and when the cover is closed.

Turning now to the on/off button 24 of the phone, illustrated in Figure 3, this
15 button has multiple functionality. In this embodiment, the functionality is determined by the manner of actuation of the button 24 and/or the state of the phone. Figure 12 illustrates how the processor 50 determines which function to perform when the on/off button is actuated.

- 20 The processor waits for actuation of the on/off button 24 by the user (Step120). When the button is actuated, the processor 50 proceeds to Step 121. In this case, the processor 50 responds differently when the button is depressed and released (short press) compared with when the button is held in a depressed position and then released (long press). The processor
25 senses the input from the button. When the button is activated the processor starts a timer. When the button is deactivated the processor stops the timer. If the count of the timer is less than a predetermined threshold the processor determines that the user employed a short press and wishes to access a function or function associated with that method. Consequently, the
30 processor moves to step 122.

Alternatively, if the count of the timer is equal to or more than a predetermined threshold (typically 1-2 seconds) the processor determines that the user employed a long press (Step 125). In this case, a long press is indicative of a

power off function, and consequently, the processor performs this function in a conventional manner.

Turning back now to Step 122, the short press is not indicative of a single
5 function. Instead, the function depends upon the state of the phone. If not in
Idle mode 54 then the processor exits all menus and returns the phone to Idle
mode 54 (Step 124). On the other hand, if the phone is already in Idle mode
54 then the processor performs a shortcut into the profiles menu (Step 123)
which may also be entered via item 124. When in the Idle mode the on/off
10 button has the same functionality as that in the NOKIA 6110 in the Idle mode.

The voice dial button 22 allows a user to dial a number using voice commands
when the phone is in the Idle state.

15 In this embodiment, the display contains different information when in the idle
state, depending on the circumstances of the phone. Figure 13 illustrates
different examples: Figure 13 (a) shows different information presented on the
display depending on whether the cover is in the open or closed position, and
Figure 13(b) shows alternative idle screens when the cover is in the closed
20 position a headset is coupled to the phone.

Figure 13(a) illustrates the idle screen as it appears on a visible area 131 of
the display and on the whole display 132, when the cover is in the closed
position. It also illustrates the screen as it appears on the display when the
25 cover is in its open position.

As can be seen, when the cover is in the closed position, the content of the
idle screen is reduced from that apparent when the cover is in its open
position, to key information such as network signal strength, battery and time
30 and this information is centred in the display. The format as opposed to the
content is also changed. In the closed position the battery and signal
indicators are of a rounded design extending towards the centre of the
display, whereas in the open position they are of a linear design. The content

of the screen is therefore more centred, simpler, clearer and contains less information when the cover is closed compared to when it is open.

Figure 13(b) illustrates idle screens 134 and 135 as they appear on a visible area of the display when a headset is coupled to the phone. In this case, for an initial period, a first idle screen 134 is presented, that comprises the word "Headset" and icon of a headset. After this period, the processor controls the display to present a second idle screen 135 in which the word "Headset" is replaced with the time.

Idle mode screen may depend upon the placement or use of the product. For example, if the phone is a wrist-worn device its idle screen may have prominent watch functions such as time zones, alarms or analogue looking clock faces. Similarly, personalisable wearable products may have user defined bitmaps.

Easy access button 36 has multiple functionality when the phone is in the closed configuration and no function, it is disabled, when the cover is opened. In this context, multiple functionality does not mean that the button has multiple functions simultaneously, it does not. At any time, the button 36 has only a single function. However, that single function may be one of many depending upon the state of the phone. Generally, actuation of the button provides the most likely response to a given situation. It does not delete or change things. If the alarm rings, activation ends the ringing. If there is an incoming call activation mutes the ringing. If a message has just been received activation opens the message. If a call has just been missed activation gives the caller's details. If the phone is in the Idle state, activation redials the last dialled number.

Figures 14 and 15 illustrate how the processor 50 determines which function to perform when the easy access button 36 is actuated.

Firstly, the processor 50 determines whether the phone's cover is in its closed position (Step 141). If it is, the processor waits for actuation of the easy

access key by the user (Step 142). However, if the phone is in its open configuration, then the processor disables the easy access key (Step 144). This disablement may be complete or partial disablement of the phone. Complete disablement may, for example include the processor not responding
5 at all to key actuation, so that even display backlighting, audible indications and the like, which generally occur upon key actuation, are not performed. Partial disablement, on the other hand, may merely be disablement of the actual function or functions associated with the key.

10 If the processor detects actuation of the easy access key, the processor proceeds from Step 142 to Step 143. Step 143 includes the determination by the processor of the state of the phone and the performance of the consequential function. This is further explained with reference to Figure 15.

15 In this embodiment, the easy access key has a plurality of functions, depending upon the phone being in one of five states when the key is actuated. These five states are incoming call, alarm, headset attached, idle and message received, as explained briefly above.

20 If the processor 50 determines that, when the key is actuated, the phone is either in the incoming call state (decision 151) or the alarm state (decision 152), then the processor disables the audible indicator or speaker 38 (Step 156). Alternatively, if the processor 50 determines that, when the key is actuated, a headset is attached to the device (decision 153) or the phone is in
25 the idle state (decision 151), then the processor accesses the last number redial menu. It also displays the last number redial option on the display 26.

The processor causes the received message to be displayed (Step 158) if the phone is in the message received state (decision 155) when the easy access
30 key is actuated. Next, the processor determines whether the message displayed is the only one received. (Step 159). If it is, then once the message has been fully displayed, the processor returns the phone to its idle state (Step 146). However, if there is a further message, the processor waits for a further actuation of the easy access key (Step 145). If the key is not actuated

within a predetermined period, then the processor returns the phone to its idle state (Step 146). However, on the other hand, if the key is actuated within the predetermined period, then the further message is displayed (Step 158). Steps 158, 159 and 145 are repeated until all messages have been displayed or the easy access key is not actuated within the predetermined period.

Figure 16 illustrates two message screens, as viewed when the cover is in its closed position. When a message is received, the state of the phone changes to the message received state. In response to this change, the processor causes the display to present the content as illustrated by the view 161. Then, once the easy access key (external button) is actuated, the message starts scrolling across the display, as illustrated by the view 162. In this embodiment, the information displayed contains the name or number of the message sender, followed by the message. Actuating the key again will cause the next message to be scrolled across the display, and so on. Once the last message has scrolled, a further actuation of the easy access key results in the phone returning to its idle state.

The procedure for dealing with a missed call or calls is similar to that for dealing with a received message or messages. When a call has been missed the caller details are stored in the phone's memory and the state of the phone changes to a missed call state. In response to this change the processor causes the display to present text indicating that a call or calls have been missed – e.g. "1 call missed", "2. calls missed" etc. Then, when the easy access key is actuated, the processor retrieves the caller's details from memory and provides them as text scrolling across the display. The callers details are also be displayed automatically if the cover is opened instead of pressing the easy access key. The details may be displayed in a static or scrolling format as described later for the display of text messages (Figure 17b).

Some functionality associated with movement of the cover has already being described such as: answering an incoming call by opening the cover, ending a call in progress by closing the cover and the change in the content of the

display when the phone is in the idle mode effected by opening and closing the cover. A further function associated with the active flip is when the phone is within an item of the menu, closing the flip will return the phone to the idle state. Opening the cover also has functionality in connection with reading
5 received messages.

The process of accessing messages through the menu structure is illustrated in Figure 17. Selecting Messages 528 from within the Menu 50 by scrolling up or down using the joystick and then pushing the joy stick inwards, displays all
10 the messaging options 171: Inbox which stores received messages, Write which allows the composition of messages, Outbox which stores sent messages, Templates which stores pro-form messages or the like and Archive in which messages may be stored from the Inbox and Outbox. The icon next to In box contains an arrow indicating it contains a new (unread)
15 message. Selecting the Inbox within the messaging options 171 by scrolling up or down if necessary to highlight "Inbox" and the then pressing the joystick in, displays the contents of the Inbox 172. The contents of the Inbox is a number of messages. The icon next to Colin indicates that this is an unread message. Selecting the message Colin from within the Inbox 172 by scrolling
20 up or down as necessary using the joystick and then pushing the joystick in, displays the contents of the message 173. Pressing the joystick in again provides a number of options 174 such as erase, edit, archive etc. Selection of the appropriate item by scrolling using the joystick and then pushing the joystick in performs the appropriate function. In the example, erase is selected
25 and the erase function performed. The display then returns to the Inbox 172 if there are any remaining unread messages or to the options 171 if there are not.

The format of the message displayed in 173 may take various forms as
30 illustrated in Figure 17b. The message may be static 176, with the user able to scroll up and down through the message by pushing the joystick up or pulling it down. The message may occupy several lines with it scrolling through the display word by word 177. For example, as a word disappears from the screen on the first line at the top left the whole message moves so that the

next word is positioned at the top left hand corner of the display and one or more words are appear on the display at the bottom right hand corner. As another alternative 178 the message may occupy a single line and scroll across the screen one character at a time as if the display where a fixed window with the message passing by as if printed on a tape moving at a constant speed past that window.

When a message is received while the cover is open, the processor enters a message received state and the Idle display changes to indicate that a message has been received. This is illustrated as 180 in Figure 18. Pushing the joystick inwards enters the Inbox 172. Pushing the joystick to the left, returns the display to the Idle mode. The up, down and right movements of the joystick have the same functions as in this received message state as in the Idle Mode.

15

When a message is received and the cover is closed there are two ways of accessing the message: pressing the easy access key and opening the cover.

As previously described with reference to Figure16, when a message has been received with the phone in the closed configuration, and the easy access key (external button) is actuated, the content of the message is scrolled across the display portion as a single line one character at a time in a manner similar to that described in relation to format 178 of Figure 17b. If the cover is then opened the format of the display changes. This is illustrated in Figure 18b. The text no longer scrolls across the display in a single line, but is preferable displayed in a static format 176 or scrolling format 177 several lines at a time. If the message is displayed in a static format 176, it does not scroll automatically but the contents can be viewed by scrolling through the message using the joystick. Pushing the joy stick upwards scrolls upwards through the message. Pulling the joystick downwards scrolls downwards through the message.

25
30

When a message is received and the cover is closed, the phone enters a message received state 161 as illustrated in Figure 16. If the cover is then

opened, the phone then enters state 73 illustrated in Figure 17a and displays the content of the message received. The format of the content may vary and may be static 176, multiple line and scrolling 177 or single line and scrolling as previously described with reference to Figure 17b. This process is illustrated
5 in Figure 18c.

The voice dial button 22 allows a user to dial a number using voice commands when the phone is in the Idle state.

10 Although the user input device 28 has been described with reference to a joystick, the invention is also applicable to other user input devices e.g. a roller or rocker key that is moveable up, down, left, right and inwards.

The present invention may include any novel feature or combination of
15 features described herein either explicitly or implicitly or any generalisation thereof whether or not it relates to the present claimed invention or mitigates any or all of the problems addressed. In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention.

Claims

1. A portable device comprising:
 - a user input comprising a key having a first function when the device is in a first state and a second function when the device is not in the first state,
 - a processor arranged to determine the state of the device and to perform the appropriate function in response to a first mode of operation of the key;
 - wherein the second function is the change of state of the device to the first state.
2. A device as claimed in claim 1, wherein the first state is an idle state.
3. A device as claimed in claim 1 or 2, wherein the first function is a shortcut to a predetermined menu.
4. A device as claimed in claim 3, wherein the predetermined menu comprises a list of first level menu items.
5. A device as claimed in claim 4, wherein the first level menu items include at least one item selected from profiles, call register, messages, infrared, calendar, calculator, games, call divert, settings.
6. A device as claimed in claim 3, wherein the predetermined menu comprises a second level menu.
7. A device as claimed in any preceding claim, wherein the key has a third function and the processor is arranged to perform the third function in response to a second mode of operation of the key.
8. A device as claimed in claim 7, wherein:
 - the third function is associated with a second state of the device;

the key has a fourth function associated with a third state of the device;
and

the processor is arranged to perform the appropriate third or fourth function in response to the second mode of operation of the key, depending upon the state of the device.

9. A device as claimed in claim 7 or 8, wherein the processor determines the mode of operation of the key by the duration of operation.

10. A device as claimed in claim 9, wherein the first mode of operation has a duration less than a predetermined threshold.

11. A device as claimed in any preceding claim wherein the key is a button.

12. A device as claimed in any preceding claim, wherein one of the functions of the key is to turn the device off.

13. A device as claimed in any preceding claim, which is a radiotelephone.

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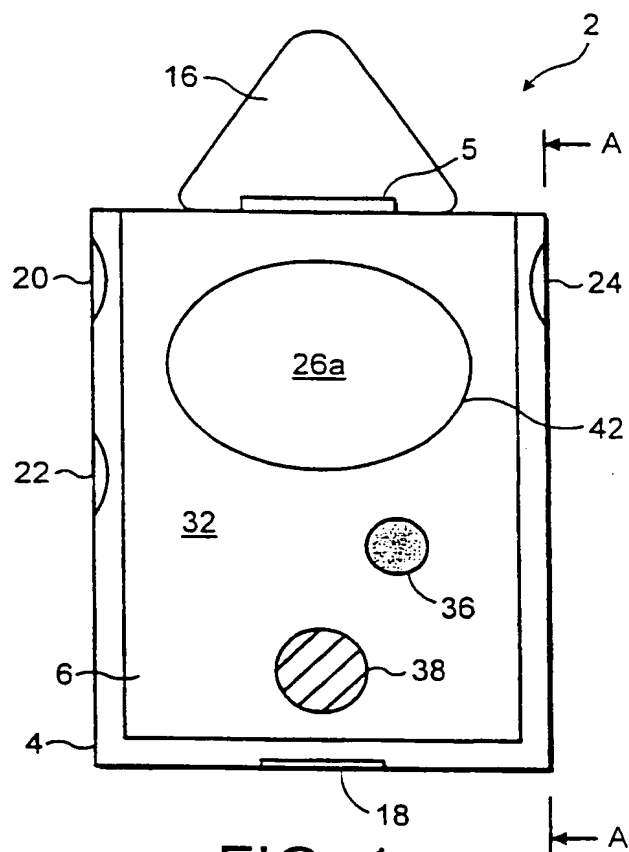


FIG. 1a

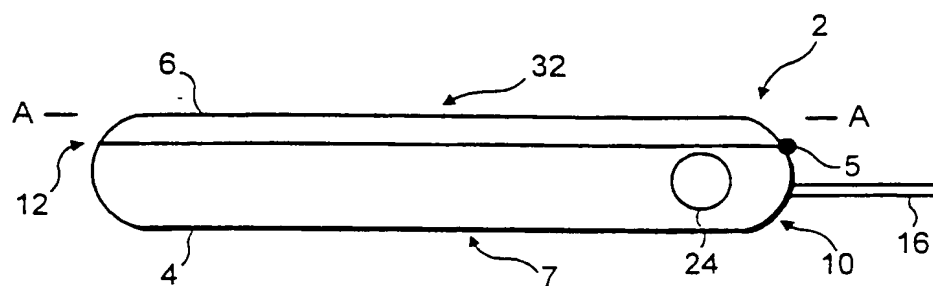


FIG. 1b

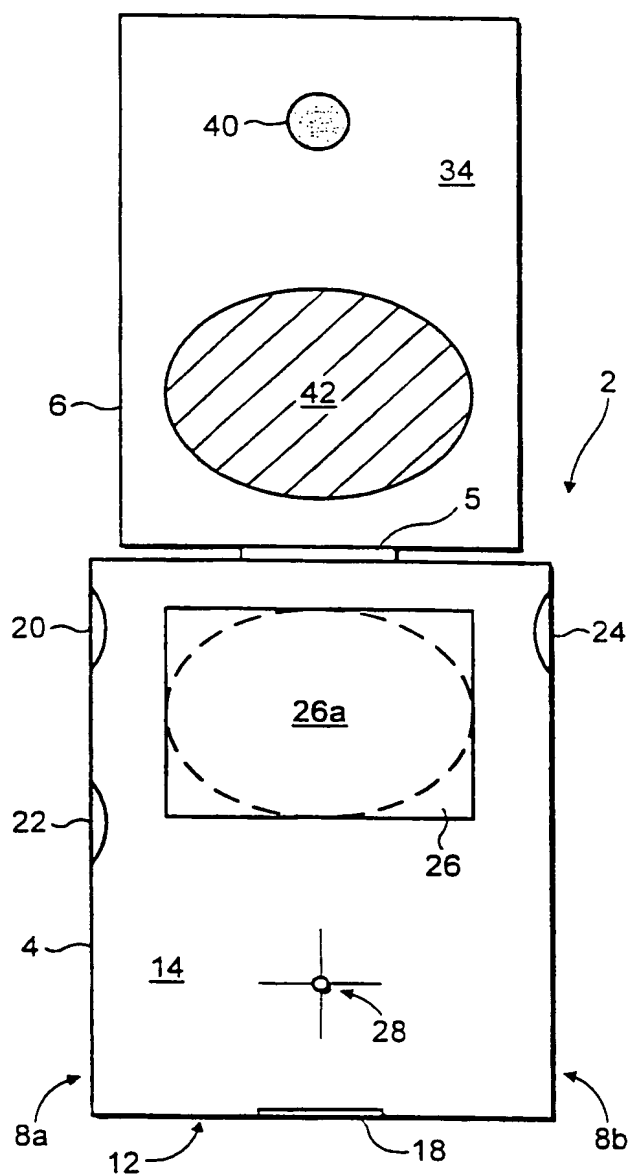


FIG. 2a

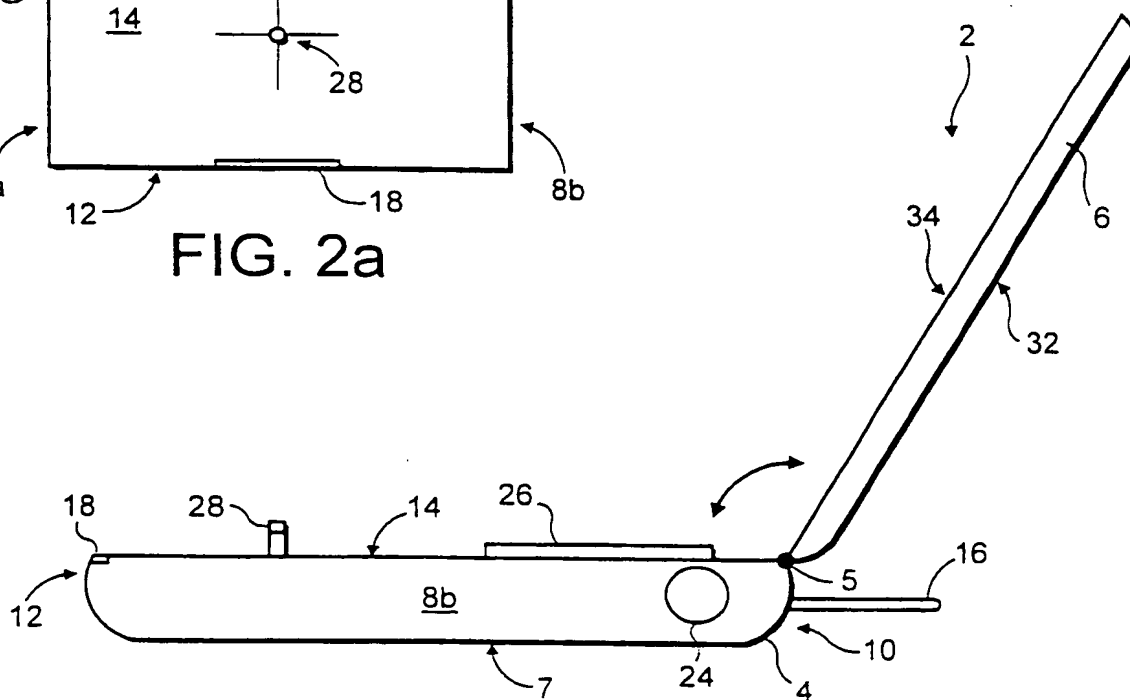


FIG. 2b

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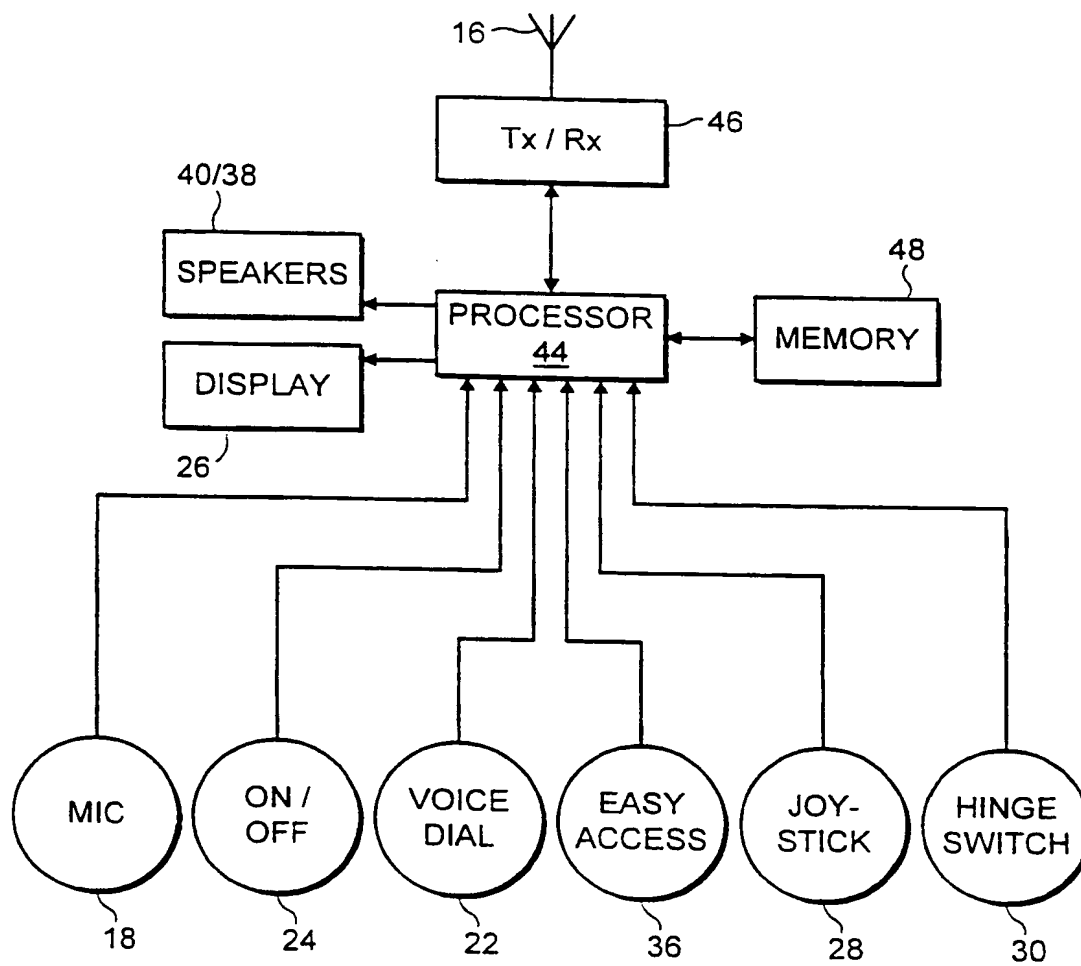


FIG. 3

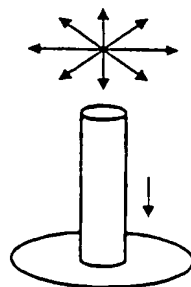


FIG. 4

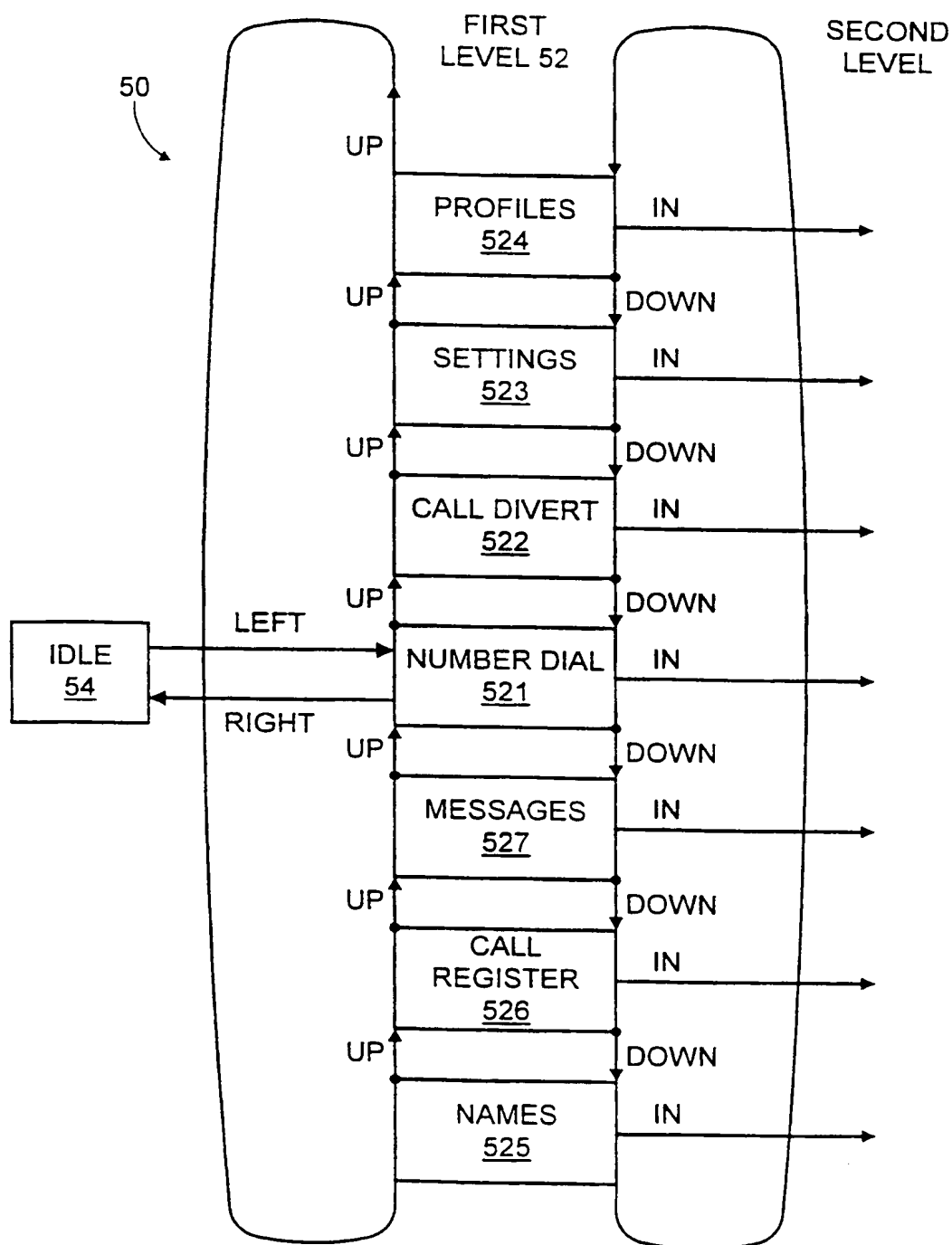


FIG. 5

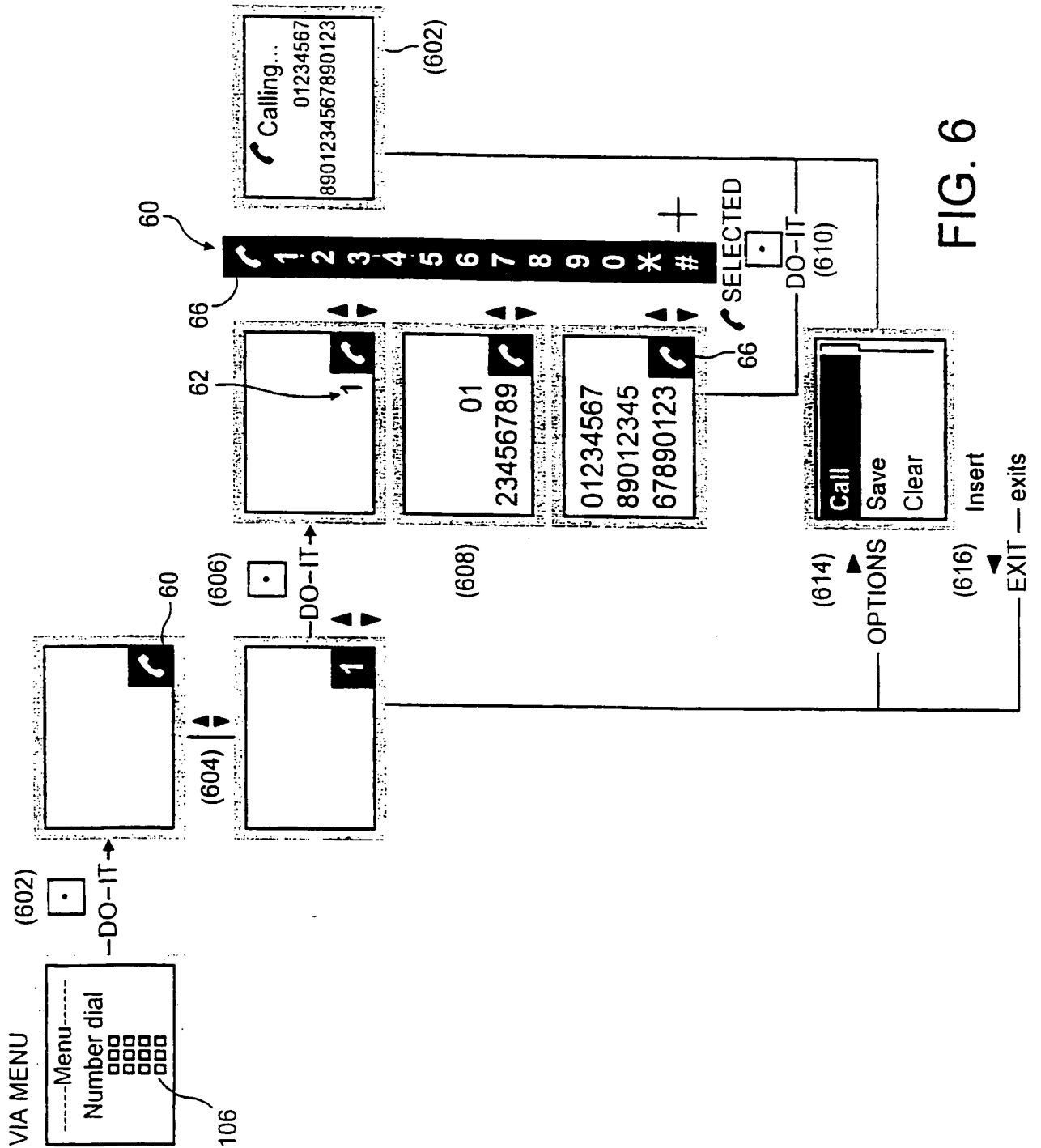


FIG. 6

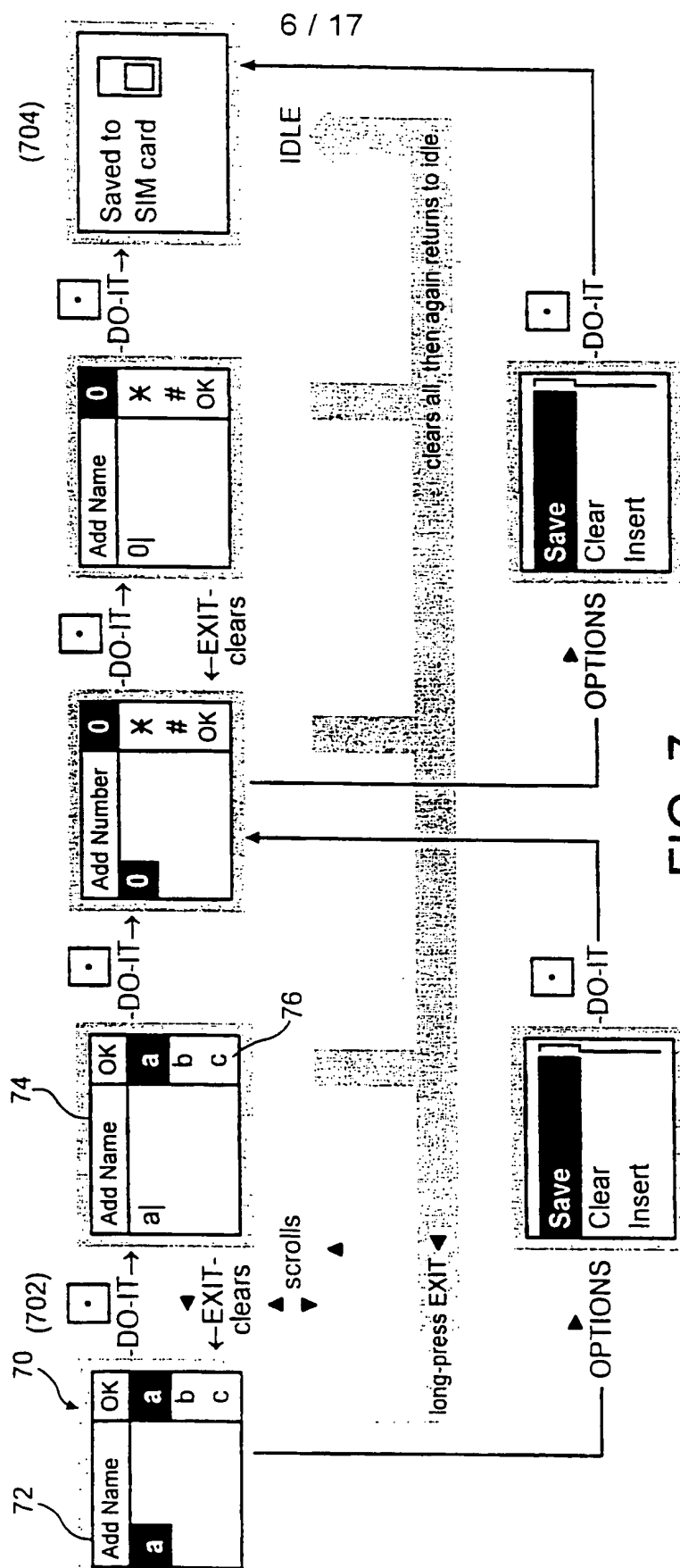


FIG. 7

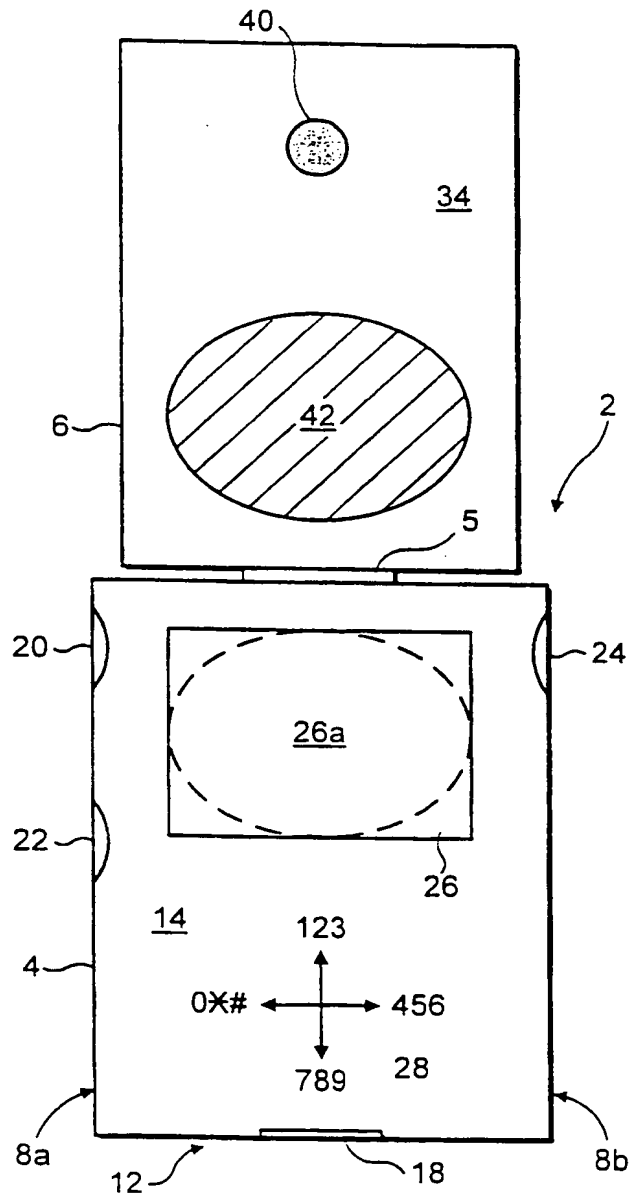
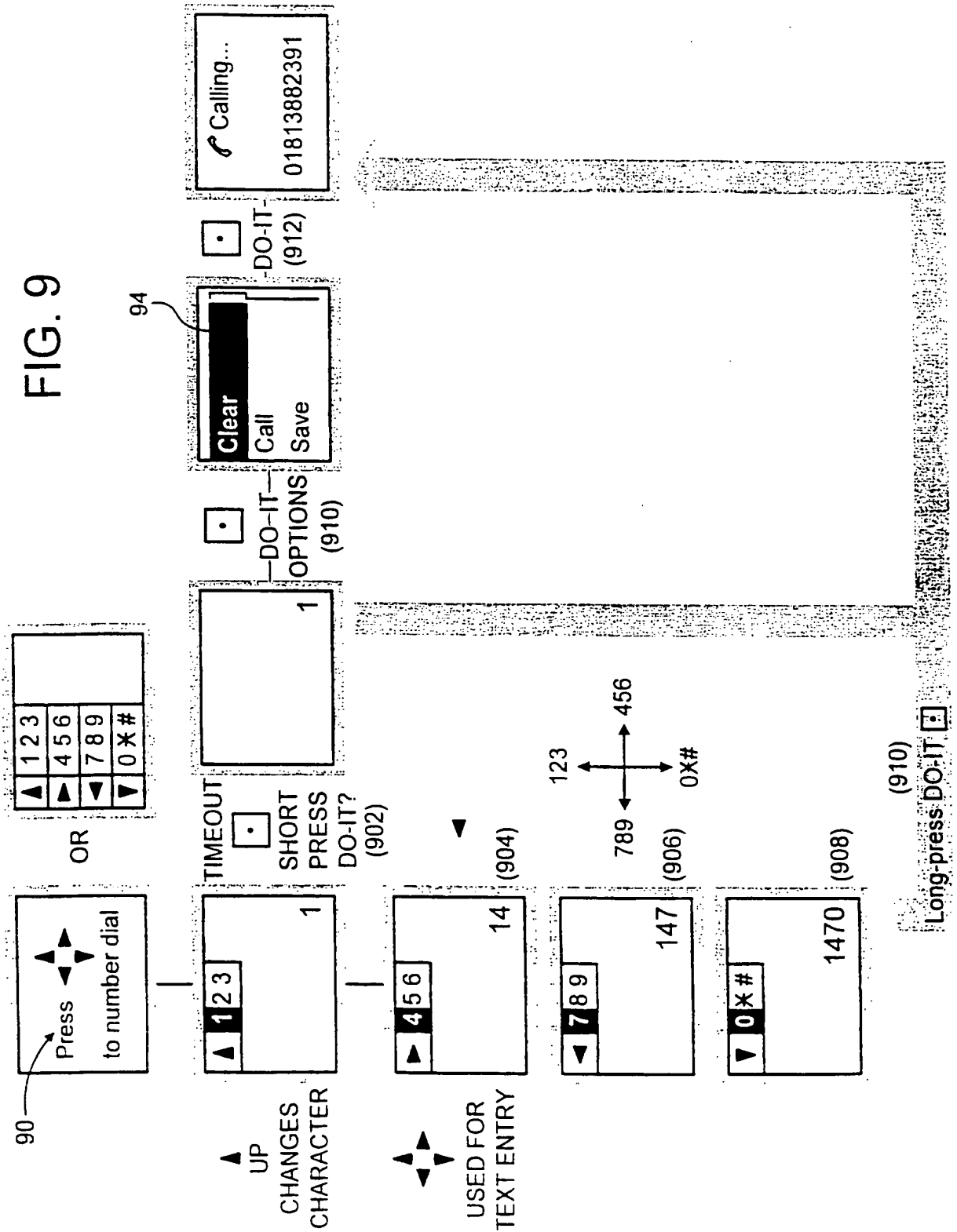


FIG. 8

FIG. 9



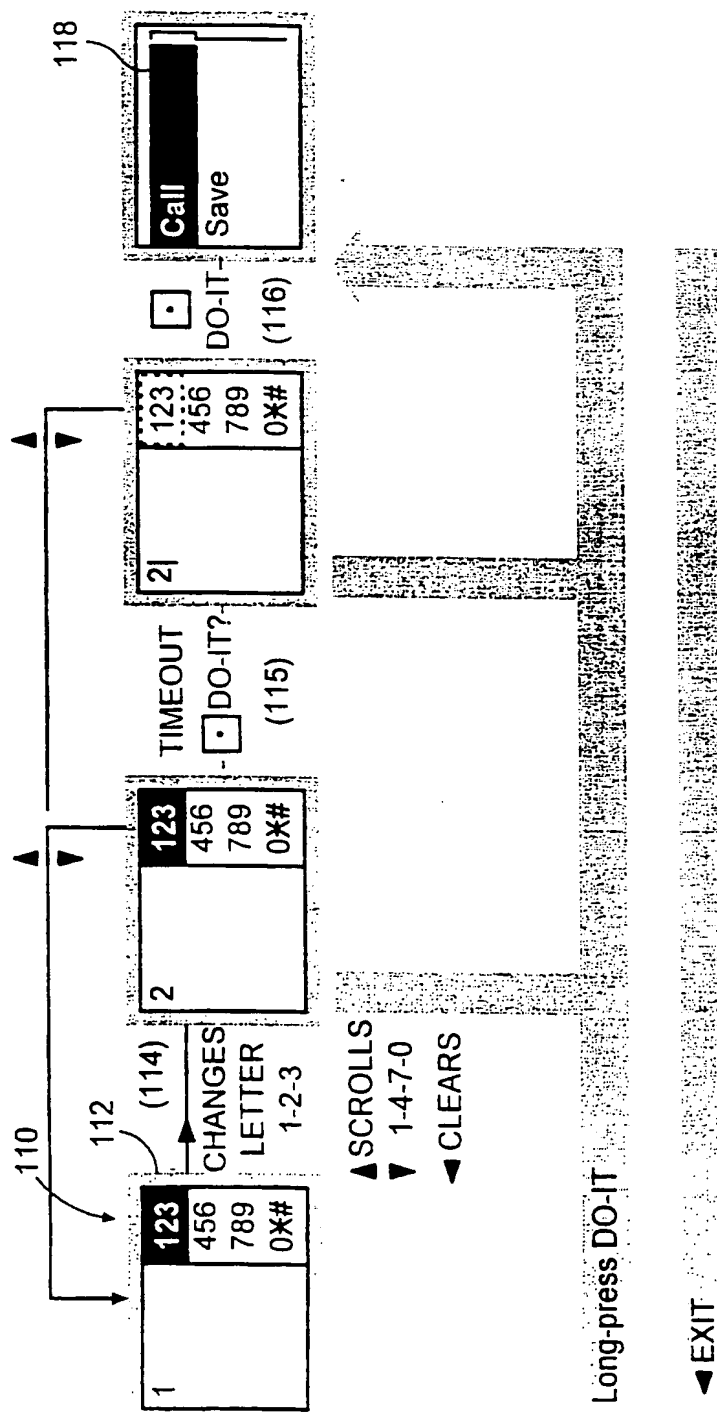


FIG. 10

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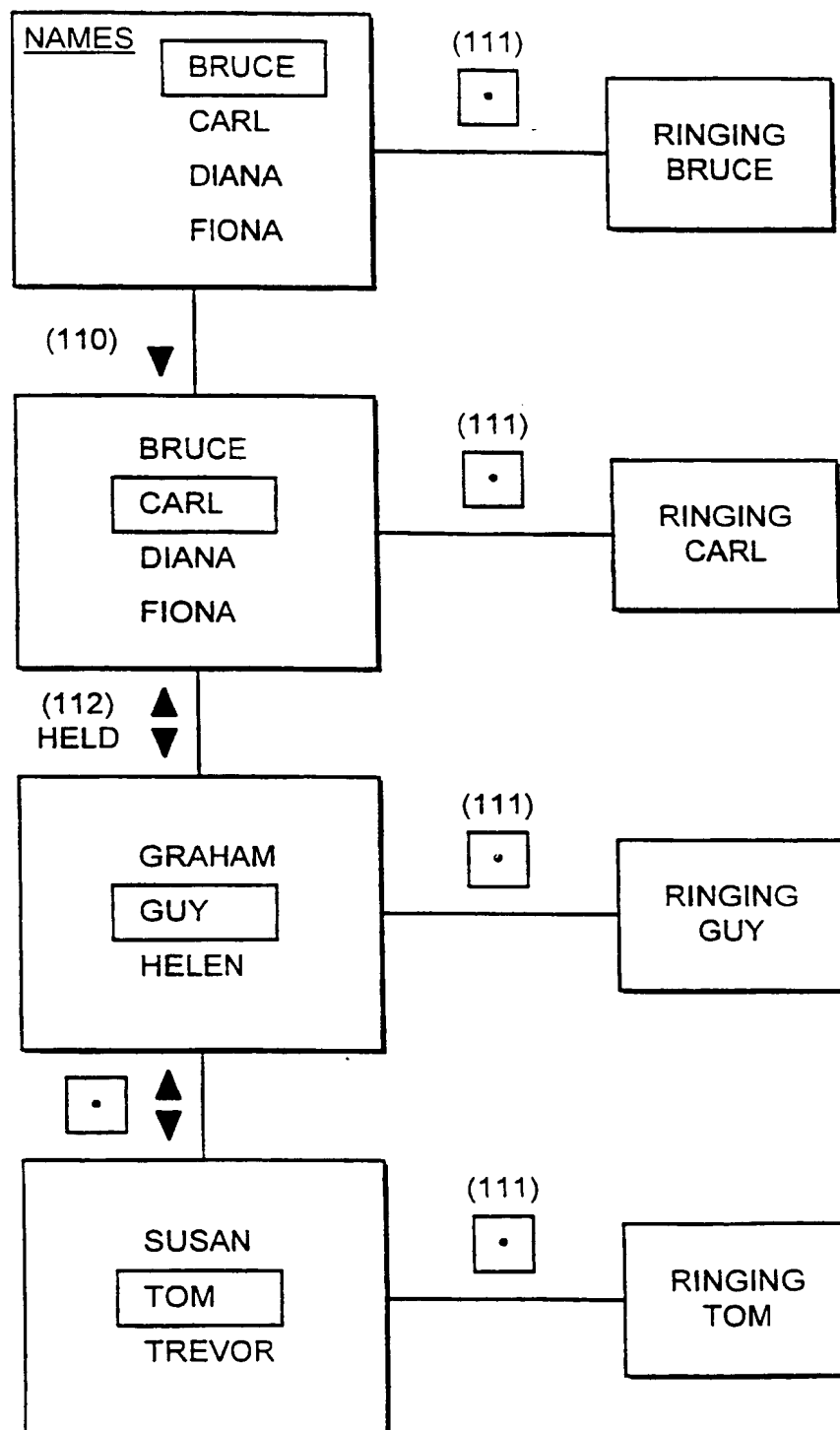


FIG. 11

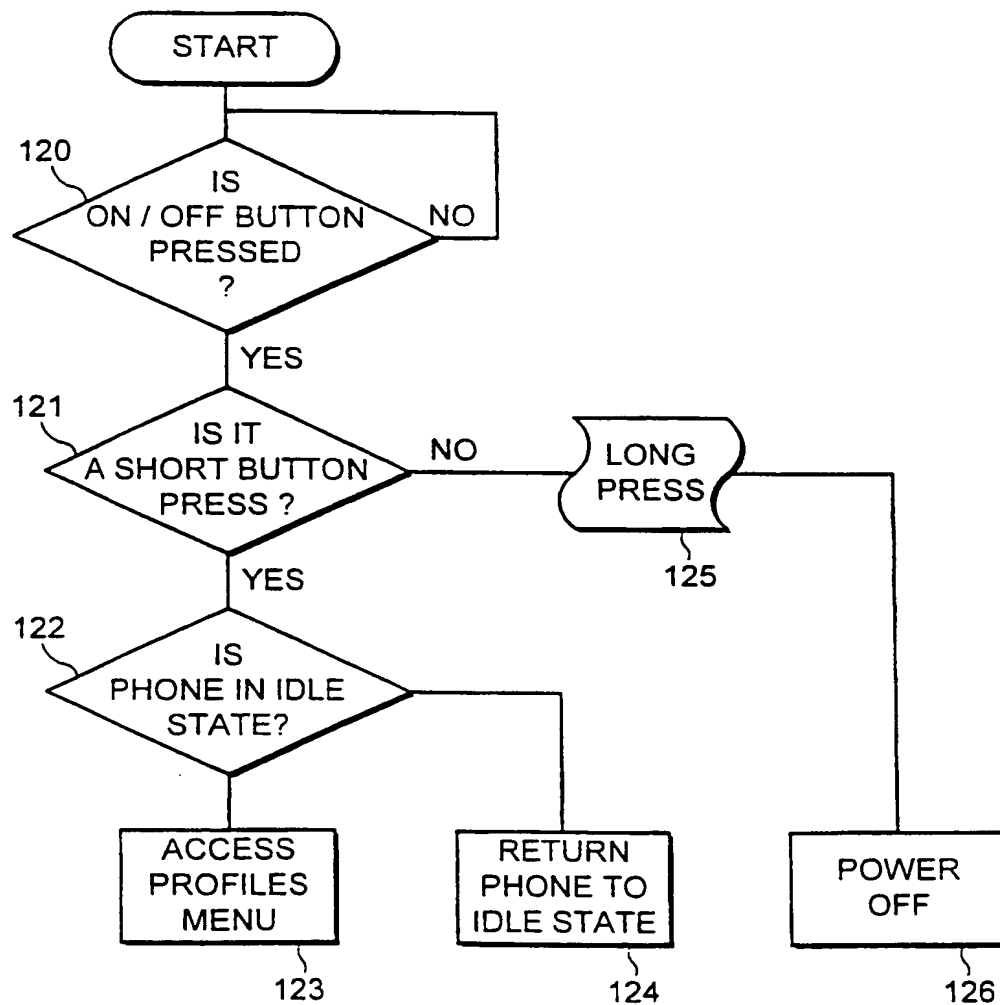


FIG. 12

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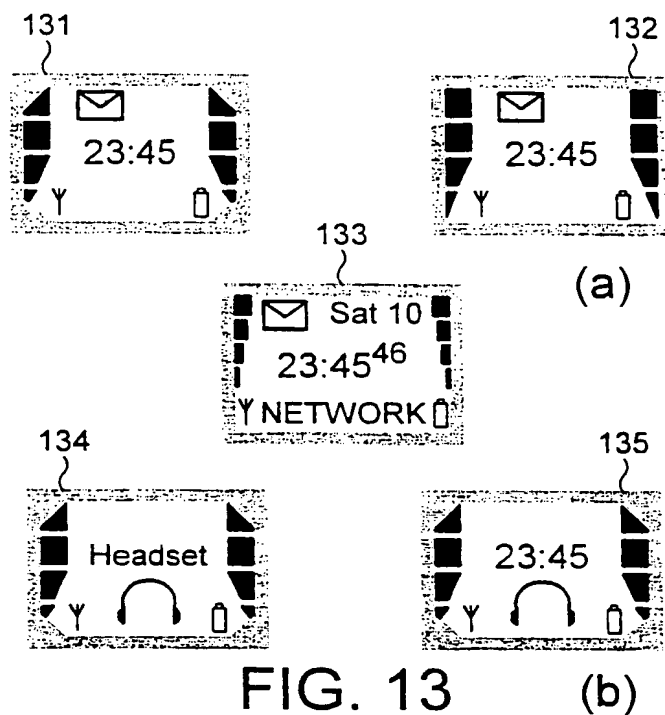


FIG. 13

(b)

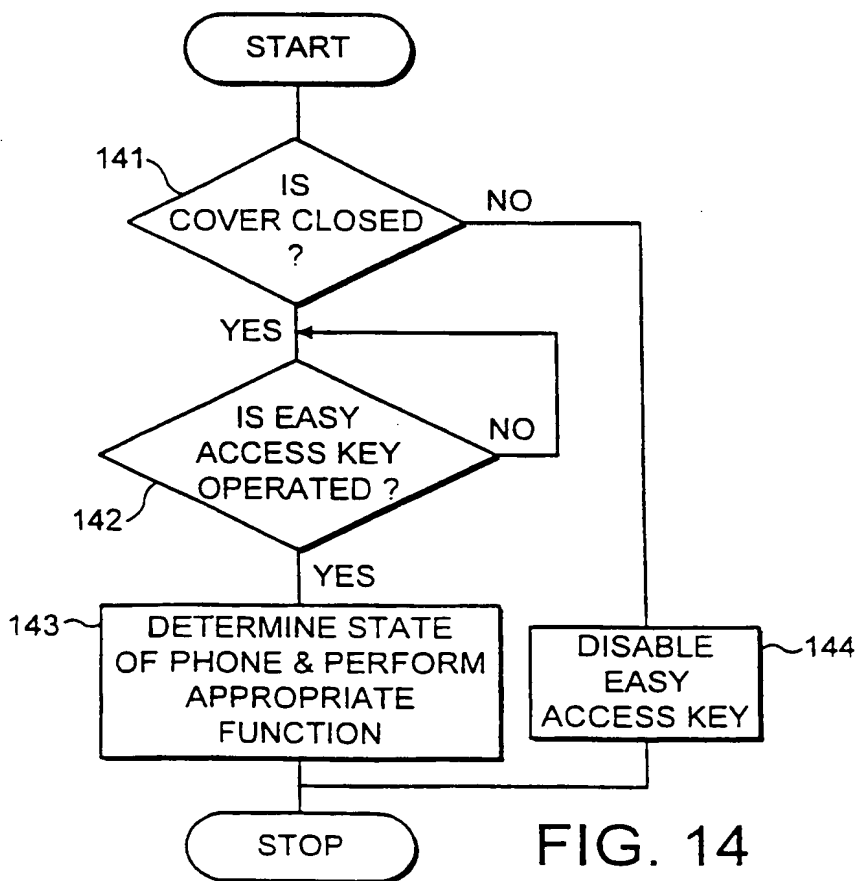


FIG. 14

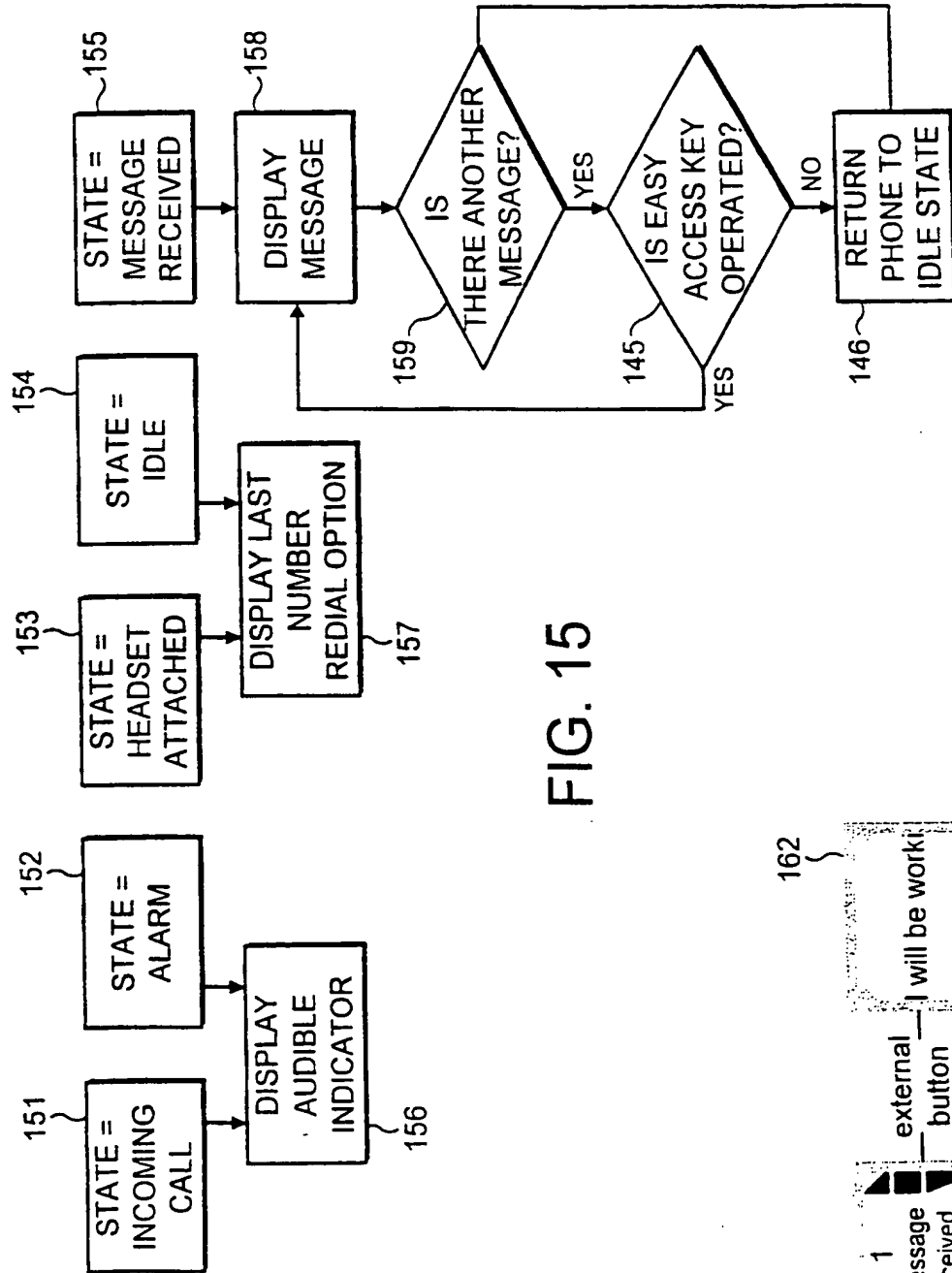


FIG. 15

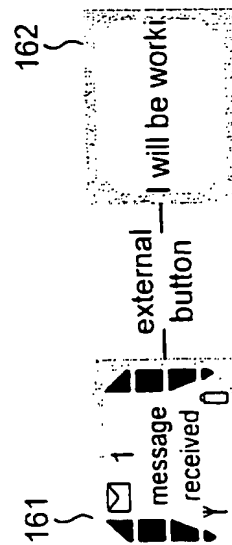
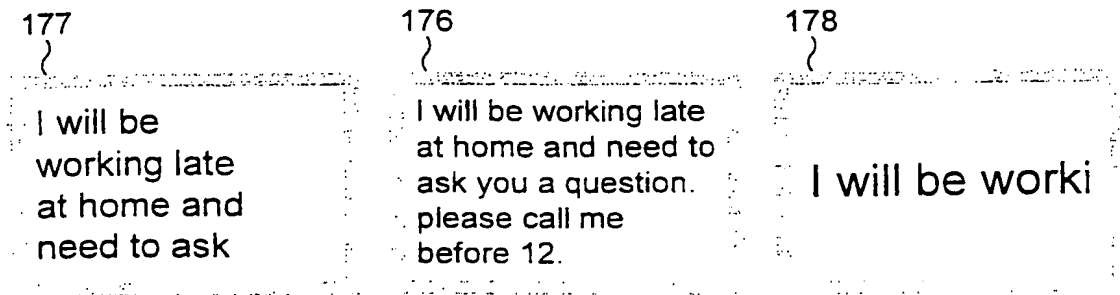
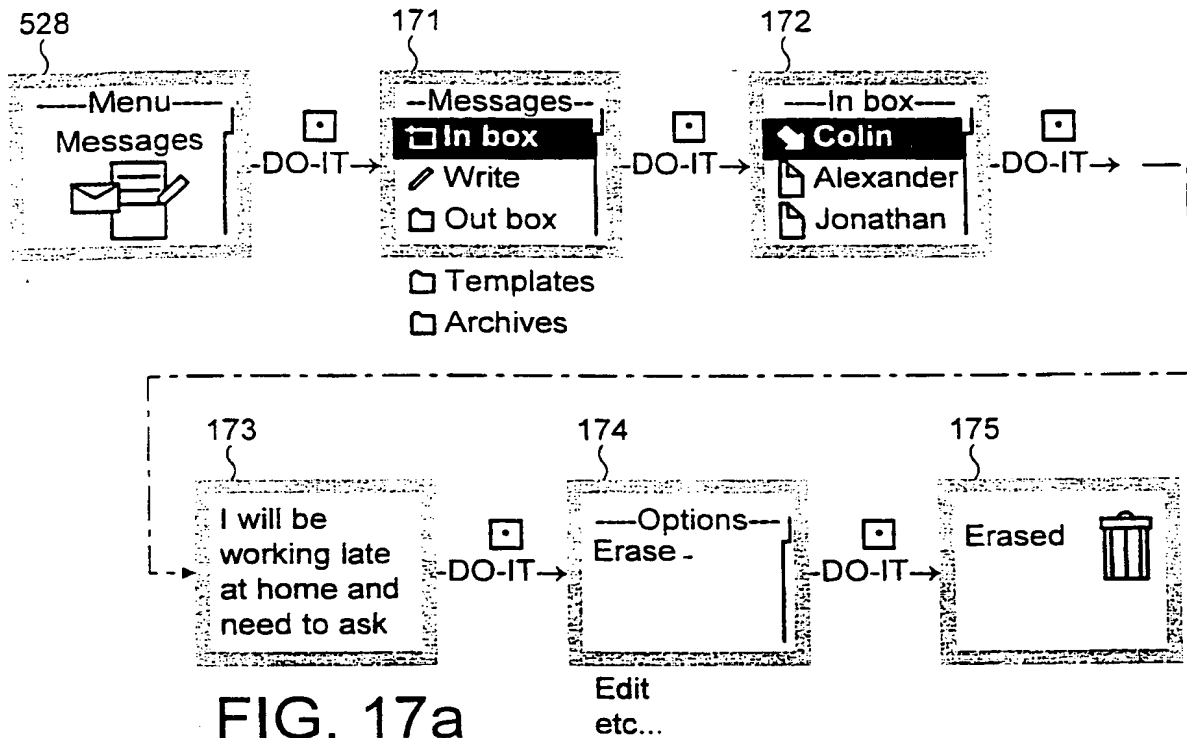


FIG. 16



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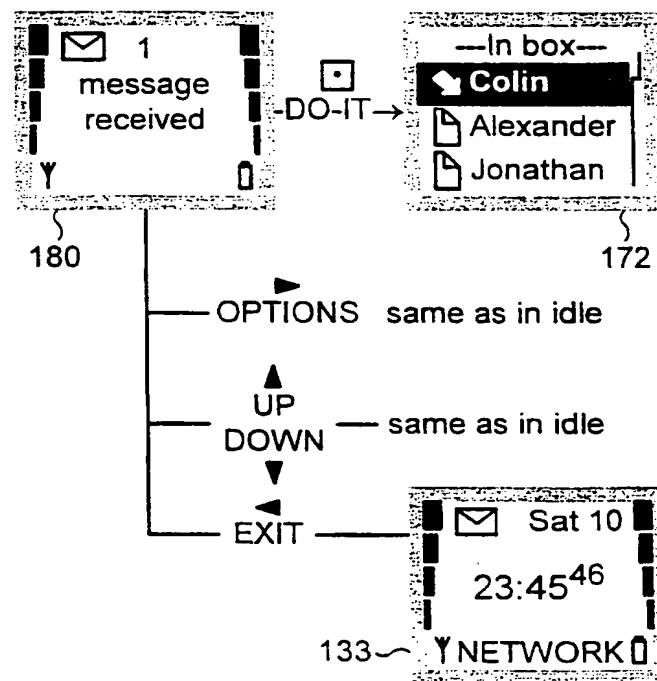
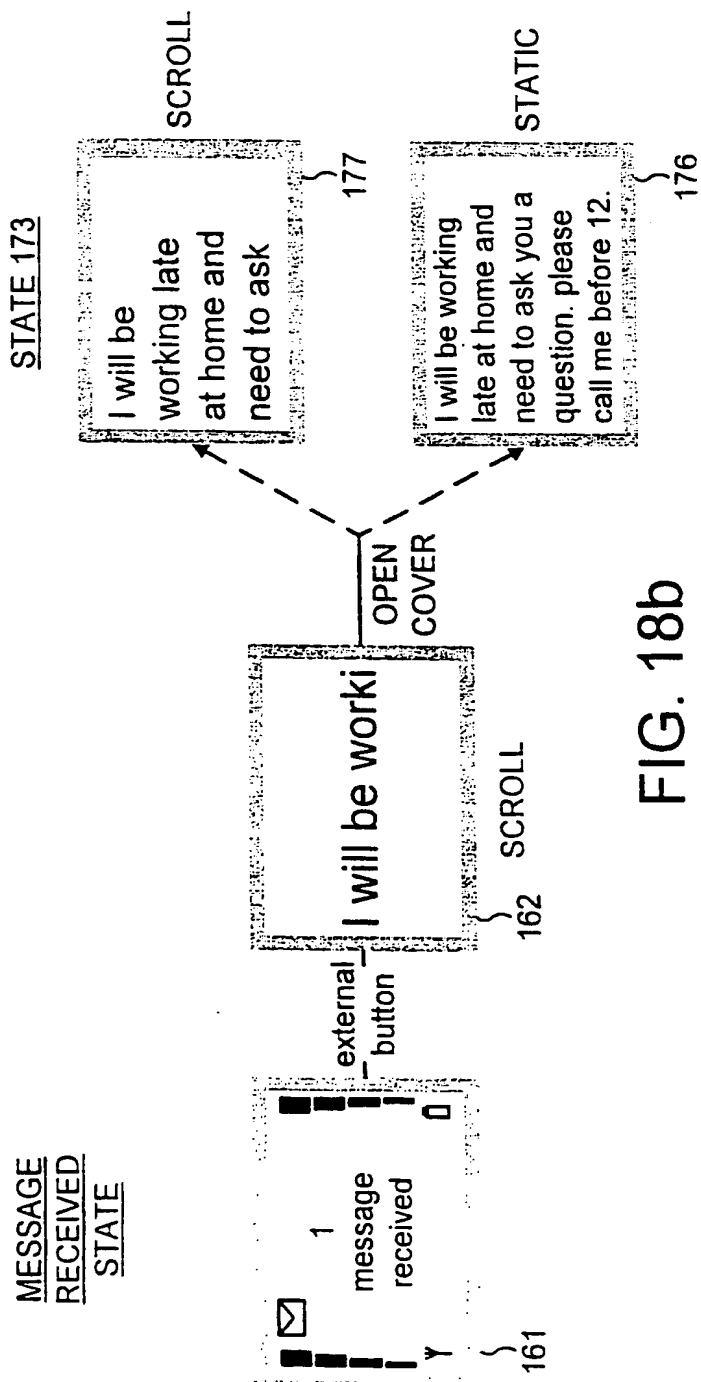


FIG. 18a



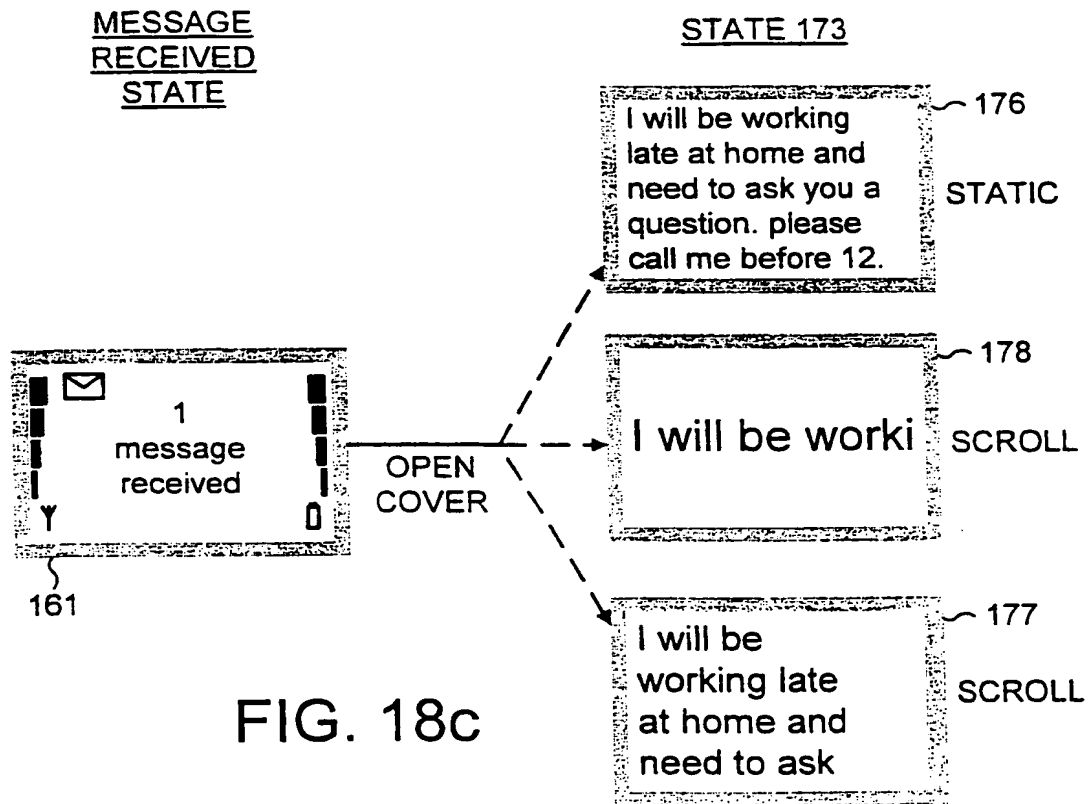


FIG. 18c

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 00/09337

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04M1/247

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 758 295 A (FALK JOHAN ET AL) 26 May 1998 (1998-05-26) column 9, line 49-62; figure 2A column 10, line 40 -column 11, line 4	1,2,7, 11-13
A	----	8
X	WO 92 14331 A (MOTOROLA INC) 20 August 1992 (1992-08-20) page 4, line 16 -page 5, line 17; figures 2,3 page 8, line 20 -page 9, line 6; figure 8	1,2, 11-13
A	----	3,7
A	EP 0 844 553 A (PHILIPS ELECTRONICS NV) 27 May 1998 (1998-05-27) column 3, line 50 -column 4, line 25; figure 2 column 5, line 40-58 -----	1,9,10



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

8 document member of the same patent family

Date of the actual completion of the international search

12 January 2001

Date of mailing of the international search report

19/01/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
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Fax: (+31-70) 340-3016

Authorized officer

de Biolley, L

INTERNATIONAL SEARCH REPORT

on patent family members

International Application No

PCT/EP 00/09337

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5758295	A	26-05-1998	AU 693538 B	02-07-1998
			AU 2104695 A	03-10-1995
			CA 2162994 A	21-09-1995
			DE 29503933 U	07-12-1995
			EP 0699366 A	06-03-1996
			FI 955500 A	15-11-1995
			WO 9525397 A	21-09-1995
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WO 9214331	A	20-08-1992	BR 9204094 A	08-06-1993
			CA 2075276 A,C	05-08-1992
			DE 4290261 T	28-01-1993
			FR 2672456 A	07-08-1992
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			IT 1257692 B	01-02-1996
			JP 2705310 B	28-01-1998
			KR 9702177 B	24-02-1997
			US 5594778 A	14-01-1997
			US 5903852 A	11-05-1999
<hr/>				
EP 0844553	A	27-05-1998	JP 10161832 A	19-06-1998
			US 6144863 A	07-11-2000
<hr/>				

PATENT COOPERATION TREATY

From the

INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

JEFFERY, K.
NOKIA IPR DEPARTMENT
Nokia House
Summit Avenue
Farnborough, HANTS GU14 0NG
GRANDE BRETAGNE

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☐ DIARY

28 JAN 2002

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☐ CC

Date of mailing
(day/month/year)

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

25.01.2002

Applicant's or agent's file reference
PAT99026*PCT

IMPORTANT NOTIFICATION

International application No.
PCT/EP00/09337

International filing date (day/month/year)
25/09/2000

Priority date (day/month/year)
08/10/1999

Applicant
NOKIA MOBILE PHONES LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



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Fax: +49 89 2399 - 4465

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PAT99026*PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/09337	International filing date (<i>day/month/year</i>) 25/09/2000	Priority date (<i>day/month/year</i>) 08/10/1999
International Patent Classification (IPC) or national classification and IPC H04M1/247		
Applicant NOKIA MOBILE PHONES LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 03/04/2001	Date of completion of this report 25.01.2002
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 </div> </div>	Authorized officer Agreda Labrador, A Telephone No. +49 89 2399 8263



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/09337

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-21 as originally filed

Claims, No.:

1-13 as originally filed

Drawings, sheets:

1/16-16/16 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/09337

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3-6,8
	No:	Claims	1,2,7,9-13
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-13
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/09337

Reference is made to the following documents, cited in the International Search Report:

- D1: US-A-5 758 295 (FALK JOHAN ET AL) 26 May 1998
- D2: WO 92 14331 A (MOTOROLA INC) 20 August 1992
- D3: EP-A-0 844 553 (PHILIPS ELECTRONICS NV) 27 May 1998

Re Item V: Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Independent claim 1 does not meet the requirements of Articles 33(1) and (2) PCT because its subject-matter is not novel.

The document D1 is regarded as the closest prior art to the subject-matter of claim 1 and this document shows the following features thereof (applying the terminology of present claim 1 and references in parenthesis relating to D1):

A portable device (column 10, lines 19-28) comprising: a user input comprising a key having a first function when the device is in a first state and a second function when the device is not in the first state (column 11, lines 3-4), a processor arranged to determine the state of the device and to perform the appropriate function in response to a first mode of operation of the key (column 10, lines 20-22); wherein the second function is the change of state of the device to the first state (column 11, lines 3-4).

This is the exact wording of claim 1, the subject-matter of which is consequently not novel. The claim does therefore not meet the requirements of Articles 33(1) and (2) PCT.

2. For the sake of completeness, it has to be said that the subject-matter of claim 1 is so **broad**, that is rendered not novel (Articles 33(1) and (2) PCT) by the disclosures of D2 and D3 (see especially sections cited in the Search Report).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/09337

3. The additional features of the dependent claims 2, 7 and 9-13 are also disclosed in D1, D2 or D3 and, consequently, cannot form the basis of another independent claim which meet the requirements of novelty (Article 33(1) and (2) PCT).
4. It should be noted that even if novelty of claims 1, 2, 7 and 9-13 could be argued based on **minor** differences between the features of cited claims and those disclosed in D1-D3, the subject-matter of these claims would not involve an inventive step (Articles 33(1) and (3) PCT), having regard to the disclosure of these documents especially as they disclose the same object and the same type of solution.
5. The dependent claims 3-6 and 8 do not seem to contain any subject-matter which, in combination with the subject-matter of the claim on which they are dependent, would lead to a claim involving inventive activity (Article 33(3) PCT). Their subject-matter concerns simple embodiments without inventive merit in themselves.

Re Item VII: Certain defects in the international application

1. The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D3 is not mentioned in the description, nor are these documents identified therein.

Furthermore, given the significance of the disclosure of these documents, the statement indicating the technical problem to be solved by the invention should have been revised taking the requirements of Rule 5.1(a)(iii) into account.

4. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/09337

5. The opportunity should have been taken to correct the following clerical errors:

- "processor 50" (page 6, line 9) should be "processor 44";
- "messages 528" (page 8, line 23) should be "messages 527";
- "menu 100" (page 8, line 31) should be "menu 50".

Re Item VIII: Certain observations on the international application

1. The feature "the processor **determines**" in the dependent apparatus claim 9 relates to an **activity**, ie step of a method rather than clearly defining the apparatus in terms of **structural** technical features. The category of this claim is therefore not clear, contrary to the requirements of Article 6 PCT.

This deficiency could have been overcome by using the "means being adapted to" type of formulation (eg "the processor is **adapted to determine**").

2. The vague and imprecise statement in the description, on page 21, lines 14-17, implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity of the claims (Article 6 PCT) when used to interpret them (see the Guidelines, C-III, 4.3a). This statement should have therefore been deleted.

PCT

REC'D 29 JAN 2002

INTERNATIONAL PRELIMINARY EXAMINATION REPORT WFO PCT

(PCT Article 36 and Rule 70)

12

Applicant's or agent's file reference PAT99026*PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/09337	International filing date (day/month/year) 25/09/2000	Priority date (day/month/year) 08/10/1999
International Patent Classification (IPC) or national classification and IPC H04M1/247		
Applicant NOKIA MOBILE PHONES LIMITED et al.		


- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

- This report contains indications relating to the following items:

- | | | |
|------|-------------------------------------|---|
| I | <input checked="" type="checkbox"/> | Basis of the report |
| II | <input type="checkbox"/> | Priority |
| III | <input type="checkbox"/> | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| IV | <input type="checkbox"/> | Lack of unity of invention |
| V | <input checked="" type="checkbox"/> | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI | <input type="checkbox"/> | Certain documents cited |
| VII | <input checked="" type="checkbox"/> | Certain defects in the international application |
| VIII | <input checked="" type="checkbox"/> | Certain observations on the international application |

Date of submission of the demand 03/04/2001	Date of completion of this report 25.01.2002
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Agreda Labrador, A Telephone No. +49 89 2399 8263



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/09337

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-21 as originally filed

Claims, No.:

1-13 as originally filed

Drawings, sheets:

1/16-16/16 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/09337

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 3-6,8
	No: Claims 1,2,7,9-13
Inventive step (IS)	Yes: Claims
	No: Claims 1-13
Industrial applicability (IA)	Yes: Claims 1-13
	No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/09337

Reference is made to the following documents, cited in the International Search Report:

D1: US-A-5 758 295 (FALK JOHAN ET AL) 26 May 1998

D2: WO 92 14331 A (MOTOROLA INC) 20 August 1992

D3: EP-A-0 844 553 (PHILIPS ELECTRONICS NV) 27 May 1998

Re Item V: Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Independent claim 1 does not meet the requirements of Articles 33(1) and (2) PCT because its subject-matter is not novel.

The document D1 is regarded as the closest prior art to the subject-matter of claim 1 and this document shows the following features thereof (applying the terminology of present claim 1 and references in parenthesis relating to D1):

A portable device (column 10, lines 19-28) comprising: a user input comprising a key having a first function when the device is in a first state and a second function when the device is not in the first state (column 11, lines 3-4), a processor arranged to determine the state of the device and to perform the appropriate function in response to a first mode of operation of the key (column 10, lines 20-22); wherein the second function is the change of state of the device to the first state (column 11, lines 3-4).

This is the exact wording of claim 1, the subject-matter of which is consequently not novel. The claim does therefore not meet the requirements of Articles 33(1) and (2) PCT.

2. For the sake of completeness, it has to be said that the subject-matter of claim 1 is so **broad**, that is rendered not novel (Articles 33(1) and (2) PCT) by the disclosures of D2 and D3 (see especially sections cited in the Search Report).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/09337

3. The additional features of the dependent claims 2, 7 and 9-13 are also disclosed in D1, D2 or D3 and, consequently, cannot form the basis of another independent claim which meet the requirements of novelty (Article 33(1) and (2) PCT).
4. It should be noted that even if novelty of claims 1, 2, 7 and 9-13 could be argued based on **minor** differences between the features of cited claims and those disclosed in D1-D3, the subject-matter of these claims would not involve an inventive step (Articles 33(1) and (3) PCT), having regard to the disclosure of these documents especially as they disclose the same object and the same type of solution.
5. The dependent claims 3-6 and 8 do not seem to contain any subject-matter which, in combination with the subject-matter of the claim on which they are dependent, would lead to a claim involving inventive activity (Article 33(3) PCT). Their subject-matter concerns simple embodiments without inventive merit in themselves.

Re Item VII: Certain defects in the international application

1. The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D3 is not mentioned in the description, nor are these documents identified therein.

Furthermore, given the significance of the disclosure of these documents, the statement indicating the technical problem to be solved by the invention should have been revised taking the requirements of Rule 5.1(a)(iii) into account.

4. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/09337

5. The opportunity should have been taken to correct the following clerical errors:

- "processor 50" (page 6, line 9) should be "processor 44";
- "messages 528" (page 8, line 23) should be "messages 527";
- "menu 100" (page 8, line 31) should be "menu 50".

Re Item VIII: Certain observations on the international application

1. The feature "the processor **determines**" in the dependent apparatus claim 9 relates to an **activity**, ie step of a method rather than clearly defining the apparatus in terms of **structural** technical features. The category of this claim is therefore not clear, contrary to the requirements of Article 6 PCT.

This deficiency could have been overcome by using the "means being adapted to" type of formulation (eg "the processor is **adapted to determine**").

2. The vague and imprecise statement in the description, on page 21, lines 14-17, implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity of the claims (Article 6 PCT) when used to interpret them (see the Guidelines, C-III, 4.3a). This statement should have therefore been deleted.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PAT99026*PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/ 09337	International filing date (day/month/year) 25/09/2000	(Earliest) Priority Date (day/month/year) 08/10/1999
Applicant NOKIA MOBILE PHONES LIMITED		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

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☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

/EP 00/09337

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04M1/247

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 758 295 A (FALK JOHAN ET AL) 26 May 1998 (1998-05-26) column 9, line 49-62; figure 2A column 10, line 40 -column 11, line 4	1,2,7, 11-13
A	---	8
X	WO 92 14331 A (MOTOROLA INC) 20 August 1992 (1992-08-20) page 4, line 16 -page 5, line 17; figures 2,3 page 8, line 20 -page 9, line 6; figure 8	1,2, 11-13
A	---	3,7
A	EP 0 844 553 A (PHILIPS ELECTRONICS NV) 27 May 1998 (1998-05-27) column 3, line 50 -column 4, line 25; figure 2 column 5, line 40-58 -----	1,9,10

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

12 January 2001

Date of mailing of the international search report

19/01/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

de Biolley, L

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/EP 00/09337

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5758295	A	26-05-1998	AU 693538 B	02-07-1998
			AU 2104695 A	03-10-1995
			CA 2162994 A	21-09-1995
			DE 29503933 U	07-12-1995
			EP 0699366 A	06-03-1996
			FI 955500 A	15-11-1995
			WO 9525397 A	21-09-1995
<hr/>				
WO 9214331	A	20-08-1992	BR 9204094 A	08-06-1993
			CA 2075276 A,C	05-08-1992
			DE 4290261 T	28-01-1993
			FR 2672456 A	07-08-1992
			GB 2258585 A,B	10-02-1993
			IT 1257692 B	01-02-1996
			JP 2705310 B	28-01-1998
			KR 9702177 B	24-02-1997
			US 5594778 A	14-01-1997
			US 5903852 A	11-05-1999
<hr/>				
EP 0844553	A	27-05-1998	JP 10161832 A	19-06-1998
			US 6144863 A	07-11-2000
<hr/>				

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
NOKIA IPR DEPARTMENT
Nokia House
Attn. JEFFERY, K.
Summit Avenue
Farnborough
Hampshire GU14 0NG
UNITED KINGDOM

☒ ☒ ☒

19 JAN 2001

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference
PAT99026*PCT

Date of mailing
(day/month/year)

19/01/2001

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.
PCT/EP 00/09337

International filing date
(day/month/year)

25/09/2000

Applicant

NOKIA MOBILE PHONES LIMITED

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.


☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority
 European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Carole Emery

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PAT99026*PCT	FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. PCT/EP 00/ 09337	International filing date (day/month/year) 25/09/2000	(Earliest) Priority Date (day/month/year) 08/10/1999
Applicant NOKIA MOBILE PHONES LIMITED		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

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☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/EP 00/09337

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04M1/247

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 758 295 A (FALK JOHAN ET AL) 26 May 1998 (1998-05-26) column 9, line 49-62; figure 2A column 10, line 40 -column 11, line 4	1,2,7, 11-13
A	---	8
X	WO 92 14331 A (MOTOROLA INC) 20 August 1992 (1992-08-20) page 4, line 16 -page 5, line 17; figures 2,3 page 8, line 20 -page 9, line 6; figure 8	1,2, 11-13
A	---	3,7
A	EP 0 844 553 A (PHILIPS ELECTRONICS NV) 27 May 1998 (1998-05-27) column 3, line 50 -column 4, line 25; figure 2 column 5, line 40-58 -----	1,9,10

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

12 January 2001

Date of mailing of the international search report

19/01/2001

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International

Application No

PCT/EP 00/09337

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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			IT 1257692 B	01-02-1996
			JP 2705310 B	28-01-1998
			KR 9702177 B	24-02-1997
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